

*The Soviet Genius Who Spied for Stalin***Leon Theremin—CIA Nemesis****Benjamin B. Fischer**

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Much of the history of the Cold War remains hidden in classified archives. From time to time, however, stories emerge that cause us to stop and think about what a strange epoch it was. One of the most intriguing revelations to come to light concerns Leon Theremin, a Russian “Thomas Edison” whose paradoxical life reflected the contradictions and convolutions of the East-West conflict. Theremin traveled from privileged Kremlin circles to the Gulag and back again, and, during a ten-year sojourn in the United States, hobnobbed with the rich and famous and made and lost fortunes while spying for Stalin. Americans believe that creativity demands freedom, yet Theremin did some of his best scientific work while imprisoned by one of the most repressive regimes of the 20th century. This brilliant scientist crossed paths with the CIA more than once—to our detriment. He appears in Aleksandr Solzhenitsyn’s novel, *The First Circle*, as Pryanchikov, an engineer ordered to build a sophisticated voice encryption system. In real life, Theremin’s story proved stranger than fiction. (U)

**Behind the Eagle’s Beak (U)**

Moscow, 4 July 1945: While hosting the traditional American national day festivities, Ambassador Averell Harriman

received a delegation of Soviet Pioneers, a youth group much like the Boy Scouts. As an expression of friendship between wartime allies, the Pioneers presented the envoy with a replica of the Great Seal of the United States of America. The Seal was made from a rare Russian wood and was hand-carved by a leading artisan. (U)

Hidden inside, behind the beak of the American eagle, was an unusual eavesdropping device. It had no wires, no conventional microphone, and no batteries—in short, nothing that would reveal its presence through conventional methods of detection.<sup>1</sup>

The United States did not discover the device for another seven years and did not officially reveal its discovery until 1960. (U)

<sup>1</sup> For accounts of the Great Seal bugging, see Tom Mangold, *Cold Warrior—James Jesus Angleton: The CIA’s Master Spy Hunter* (New York: Simon & Schuster, 1991), pp. 256-257; David Wise, *Molehunt: The Secret Search for Traitors That Shattered the CIA* (New York: Random House, 1992), p. 14; and Albert Glinsky, *Theremin: Ether Music and Espionage* (Urbana and Chicago: University of Illinois Press, 2000), pp. 259-260, 271-274, 304, 335, and 338. (U)



The Great Seal that hung in Spaso House, the residence of the American Ambassador in Moscow, with the location of the bug superimposed. (U)

### Discovery and Disclosure (U)

Although some details have leaked out, the full story of the discovery of the sophisticated device remains in classified files.<sup>2</sup> Harriman had the seal hung in his study on the second floor of Spaso House, his residence in Moscow, which had once been the palatial home of a wealthy merchant. The bug—or cavity resonator, to use its technical name—remained there, like the proverbial fly on the wall, picking up

<sup>2</sup> Information on the discovery of the Soviet bug is drawn from a memorandum from [redacted]

[redacted] Office of Security [US Department of State], to [redacted]

[redacted] Office of Security, "Narrative Report of Cavity Resonator Discovery," 24 October 1968. A copy of this memorandum is available from the CIA History Staff of the Center for the Study of Intelligence. (C)

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In the fall of 1951, [redacted]

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sensitive information during the dark days of the early Cold War. Gen. Walter Bedell Smith, who succeeded Harriman as ambassador and was later appointed Director of Central Intelligence, had the Seal removed, repaired, and cleaned in time for an official visit by Secretary of State George C. Marshall; Smith and Marshall discussed US policy toward the USSR within range of the hidden listening device. (U)

In the fall of 1951, [redacted]

The State Department dispatched a technical security team to “sweep” for listening devices—it literally took apart Kennan’s office. Nothing was found. (C)

Subsequently, a technical security specialist named [redacted]

[redacted] arrived to continue the search. [redacted] was convinced that there was a listening device in Spaso House, not Kennan’s office in the Embassy building several blocks away. He decided to begin his search there [redacted]

[redacted] He quickly pinpointed the place on the wall where the Seal was mounted. He and the personnel officer then dismantled the wall behind the Seal down to the basic construction. They found nothing, confirming that a single bug was inside the Seal itself. (C)

[redacted] to the US Naval Research Laboratory, where, on orders from President Harry Truman, technicians analyzed the cavity resonator. The President’s concern is clear from a memorandum that he sent to the National Security Council in September 1952:

*The Secretary of State has informed me regarding the listening device discovered*

<sup>3</sup> The acronym KGB (Committee for State Security) is used throughout this article, although the Soviet secret police were known as the MGB (Ministry of State Security) and other names until 1954. (U)

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The genius of the Soviet bug was its simplicity.

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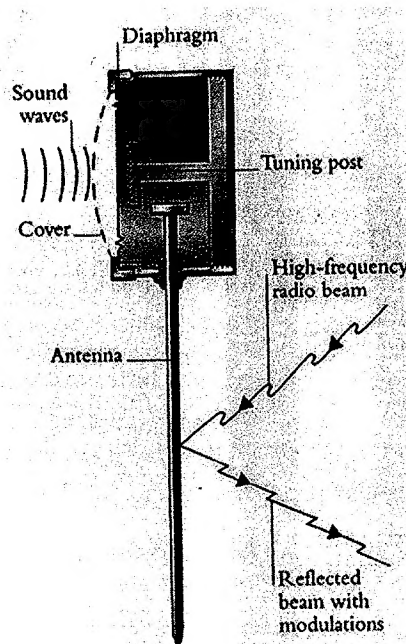
recently in one of the buildings housing some of our diplomatic personnel in Moscow. Appropriate technical research has been initiated with respect to this device with a view to developing detection and counter-action devices.

In view of the security problems posed by the existence of this device, I want the two Internal Security Committees of the Council, in collaboration with the Central Intelligence Agency and other interested agencies, to examine jointly these security implications and to insure that appropriate countermeasures are put into effect, both immediately and in the light of the above-mentioned technical research.

I wish to be kept advised through your office of the work of the Committees on this problem, including any recommendations for action required by me.<sup>4</sup> (C)

The genius of the Soviet bug was its simplicity. In effect, it was a microphone in the form of a resonating chamber with a flexible front wall that acted as a diaphragm, altering the dimensions of the chamber when struck by sound waves.<sup>5</sup> Soviet intelligence activated the device with an ultra-high frequency signal beamed from a

<sup>4</sup> Letter to Mr. James S. Lay, Jr., Executive Secretary, National Security Council, archived at the Harry S. Truman Library, Papers of Harry S. Truman, President's Secretary's Files. (U)



The cavity resonator hidden inside the Great Seal had no wires, no conventional microphone, and no batteries. (Diagram from: H. Keith Melton, *The Ultimate Spy Book*, (New York: DK Publishing, Inc., 1996). (U)

van parked outside Spaso House. [redacted] the CIA officer assigned to analyze the device, explained it by saying: "Technically it was a passive device... [with] an infinite life expectancy."<sup>6</sup> After analyzing

<sup>5</sup> The description of how the cavity resonator worked is drawn from Glinsky, pp. 259-260. The results of FBI and US Naval Research Laboratory analysis are found in: FBI Laboratory, "Drawing and Photographs, Russian Resonant Cavity Microphone," no date [possibly December 1952]. Copy available from the CIA History Staff of the Center for the Study of Intelligence. (S)

the cavity resonator, US technicians built a device to activate it. The activating mechanism was then sent to the US Embassy in Moscow to test for additional secretly placed cavity resonators. None were found. (C)

Someone leaked part of the story of the discovery of the sophisticated bug to the now defunct *Washington Evening Star* in 1953—"The Russians have become the world's experts in creation of such electronic devices," the *Star* exclaimed.<sup>7</sup> Nonetheless, the United States kept the cavity resonator under official wraps until May 1960. At that point, Henry Cabot Lodge, US Ambassador to the United Nations, unveiled a replica of the device with the Great Seal before the General Assembly to counter a Soviet propaganda barrage after the shootdown of the U-2 reconnaissance aircraft piloted by Francis Gary Powers. (U)

## Alarms Go Off (U)

Lodge's performance gave the American public its first glimpse into the secret world of electronic intelligence gathering. The disclosure heightened concern that America lagged behind the Russians, a perception that was not confined to the public-at-large. (U)

<sup>6</sup> Wise, p. 14. (U)

<sup>7</sup> Constantine Brown, "Secret Ears in U.S. Embassy," *Evening Star*, 20 March 1953, p. A-9. (U)

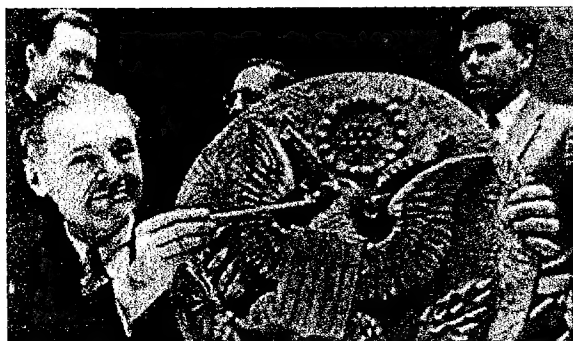
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**The Soviet device seemed to confirm that the CIA was being beaten in the espionage technology race.**

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A 1957 CIA Inspector General's report stated flatly that the Moscow discovery "had set off a chain reaction, the effects of which are still being felt."<sup>8</sup> In the demimonde of the CIA-KGB spy war, the psychological impact was akin to the launching of Sputnik a few months later. The Soviet device confirmed—or seemed to confirm—that the CIA was being beaten in the espionage technology race. As one intelligence expert noted years later, the Soviets had reached a "level previously thought to be impossible," while CIA audio equipment "relied upon commercial law enforcement equipment and antiquated World War II telephone-company listening devices."<sup>9</sup> (S)

CIA data on Soviet eavesdropping capabilities and techniques were seriously deficient. The cavity resonator was ingenious—it took quite a while to figure out how it worked and even longer to duplicate and improve upon it. The fact that the CIA, as well as the State Department and the military intelligence services, had discovered numerous *conventional* listening devices was no suc-



UN Ambassador Henry Cabot Lodge displaying the Great Seal to the General Assembly, May 1960. (U)

cor. Senior officials were concerned—almost panicked—that many more of the sophisticated devices were in use. (S)

Information on Soviet audio systems was not only sparse, but also dispersed among many offices. Technical countermeasures became an urgent national security matter requiring White House-level attention and a new national policy. The perceived threat was so serious that, in December 1956, the National Security Council created the Special Committee on Technical Surveillance Counter Measures to coordinate technical countermeasures for the entire Intelligence Community.<sup>10</sup> A CIA deputy director for security was assigned to it [redacted]

### Soviet Faust (U)

What the CIA did not know—and would not learn until near the end of the Cold War—was that the Moscow bug that triggered such anxiety in Washington was the handiwork of an

<sup>8</sup> *Inspector General's Survey of the Technical Service Staff*, April 1957, Volume I, p. 177. Records of the Office of the Inspector General, Job 62-01094R, Box 2. (S)

<sup>9</sup> H. Keith Melton, *CIA Special Weapons & Equipment: Spy Devices of the Cold War* (New York: Sterling Publishing Co., Inc, 1993), p. 6. (U)

<sup>10</sup> *Inspector General's Survey of the Technical Service Staff*, pp. 178-179. (S)

<sup>11</sup> *Ibid.* (U)

<sup>12</sup> *Ibid.* (S)

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**The Moscow bug that triggered such anxiety in Washington was the handiwork of an aristocratic genius named Leon Theremin.**

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aristocratic genius named Leon Theremin.<sup>13</sup> Theremin was born Lev Sergeyevich Termin in St. Petersburg in 1896 into a family of nobles descended from French Huguenots who had immigrated to Russia in the 18th century.<sup>14</sup> He was a child prodigy and experimented with electricity, then still in its infancy, before entering college. He graduated on the eve of World War I, served in a radio battalion of the Imperial Army, and, despite his origins, embraced the Bolshevik Revolution. In turn, it apparently embraced him. Communism, Theremin believed, was the wave of the future because it would use technology to achieve social and economic progress. He often quoted Lenin's famous dictum that communism was Soviet political power plus electrification of the entire country. Lenin apparently recognized Theremin's

gifts and heralded him as a “proletarian” genius, noble origins notwithstanding. (U)

Theremin's name was not unknown in America; indeed he lived in New York from 1927 to 1938, where he mixed easily with Gotham's artistic, scientific, and corporate elites. His New York notoriety derived from his many inventions, but he was best known as the pioneer of electronic music. He was the inventor of the “theremin,” the eponymous instrument that many consider the grandfather of all modern electronically made music. (U)

Theremin had invented the “etherphone,” as his instrument was first called, in 1919, while he was still an undergraduate studying physics. Lenin requested a demonstration in 1922, and Theremin put on a show for him in the Kremlin.<sup>15</sup> In 1927, the inventor was permitted to leave the USSR and take his show on the road, first

to Berlin and then to other European capitals, before he arrived in New York City for a ten-year stay. He put on sold-out concerts at the Royal Albert Hall in London, the Paris Opera House, and Carnegie Hall in New York City. Theremin hoped to revolutionize the performance of classical music—his 1928 concert at Carnegie Hall featuring ten theremins made him the toast of the town. (U)

The novelty of the instrument turned the music world on its ear. “Surely,” *New York Times* music critic Janet Maslin wrote, “the theremin is the weirdest of all musical instruments.”<sup>16</sup> It looked like a portable podium, not unlike those in many conference rooms, with a horizontal loop on one side and a vertical antenna on top. It was played by moving one's hands in the air around the antennas. One hand was used to control the pitch, and the other to control the volume. (U)

The theremin briefly appeared to have brighter commercial prospects than radio, which was just coming into widespread use. In 1929, Radio Corporation of America (RCA) president David Sarnoff purchased the patent to the theremin with the intention of selling one to every American household that could afford one. The instrument,

<sup>13</sup> Information in this and subsequent paragraphs on the details of Theremin's life are based on: Bulat M. Galejev, “Soviet Faust in the Country of the Yellow Devil,” website <http://he.net/~enternet/teci/faust/faust.htm>, accessed 15 April 2002; Bulat M. Galejev, “Light and Shadows of a Great Life: In Commemoration of the One-Hundredth Anniversary of the Birth of Leon Theremin, Pioneer of Electronic Art,” website <http://mitpress2.mit.edu/e-journals/Leonardo/isast/journal/journal96/LMJ6/galejevintro.html>, accessed 24 January 2002; and Glinsky, *op. cit.* Galejev, a Russian musicologist, and Glinsky, an American musicologist, are the leading experts on, and biographers of Theremin. Overall, a bibliography of works on Theremin would run to dozens of books and hundreds of articles. (U)

<sup>14</sup> Theremin anglicized his name after moving to New York in 1927. (U)

<sup>15</sup> He also demonstrated his inventions for Stalin. In 1927, Theremin was called to the Kremlin to show his latest invention, a television set with 100 lines of resolution on a five-foot-square screen. It took the Radio Corporation of America until 1931 to design a screen with greater resolution. (U)

<sup>16</sup> Janet Maslin, “Beyond the Theremin,” *The New York Times*, 8 September 1995, p. 8-C. (U)

however, eventually flopped. It was difficult to play, expensive to produce, and never caught on with either musicians or the public. (U)

The decade that Theremin spent in New York was fittingly one of prodigious technical achievement and repeated business failure. He continued working on his electronic musical instruments and made numerous contacts in the business and artistic worlds. Theremin had a practical side and a nose for things that could make him money in America. He created an electronic crib alarm after the infant son of Charles and Anne Lindbergh was kidnapped. The US Bureau of Prisons hired him to build the world's first metal detector at Alcatraz. That invention did not work properly, and Theremin lost his contract, pushing him over the brink into bankruptcy. All told, several small fortunes passed through his hands. (U)

Theremin eventually settled into a kind of lab-cum-salon in a townhouse on Manhattan's West 54th Street owned by a wealthy patron. There he devised a multitude of devices that must have seemed like pure science fiction, including electronic lighting shows, an electronic dance platform, and even a prototype color television system. Artists, musicians, composers, dancers, and choreographers all beat a path to his door, seeking to fuse art with science in the dawning of a new technological age. (U)

All this while, however, Theremin was leading a double life. As he revealed for the first time in 1988 in a series of articles in *Moscow News*—revelations made possible by Mikhail Gorbachev's policy of *glasnost*—the brilliant inventor was a Soviet spy.<sup>17</sup> Jan Berzin, the founder and chief of the GRU (Soviet military intelligence), had recruited him and then sent him to Berlin and other European capitals to establish his cover story and make contacts. (U)

Theremin was already up in years when he began telling his story. His memory was not always sound, and he told different versions on separate occasions. His main mission, apparently, had been to obtain scientific and military intelligence from his contacts and to assess whether, in a future European conflict, the United States would be neutral, an ally, or a foe of the Soviet Union. Theremin told his Russian biographer in the 1980s that he had been the GRU *rezident* (chief of station) in New York and compared himself to Richard Sorge, the famous Soviet illegal whose statue stands in Moscow and whose face once adorned Soviet postage stamps.<sup>18</sup> With his American biographers, Theremin was more modest. He disclaimed any major espionage success (thus denying damage to American interests).

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<sup>17</sup> Glinesky, pp. 320-334. (U)

<sup>18</sup> Galeyev, "Soviet Faust in the Country of the Yellow Devil." (U)

As an example, he cited a requirement to find out the diameter of a military aircraft muffler, observing that such matters had bored him. (U)

Theremin almost certainly was too modest—or too reticent. He hobnobbed with the cultural and artistic elite of New York and had wealthy patrons. His circle of acquaintances encompassed people with names like Rockefeller, Dupont, Morgan, and Ford. His contacts also included an obscure Army lieutenant colonel named Dwight D. Eisenhower and an Army major named Leslie Groves, who later managed the Manhattan Project. (U)

It seems likely that Theremin, who was often in debt despite the millions his inventions earned, may have used some of his money to support Soviet intelligence operations.<sup>19</sup> He incorporated one of his spin-off companies in Panama, using it to cover a GRU network that targeted the US military presence in the Canal Zone. He also laundered money for Amtorg, the Soviet state foreign trade company that provided cover for espionage and the Comintern's efforts to foment revolution in the West and in the Third World. (U)

This, unfortunately, is the sum and substance of what we know about Theremin's covert life in America, and even these

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<sup>19</sup> Glinesky, pp. 95-97. (U)

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bits of information are at times contradictory and incoherent. Theremin's Russian biographer called him the Soviet Faust, an allusion to Goethe's famous character who makes a deal with Mephistopheles in order to achieve worldly success. In Theremin's case, he made a deal with Soviet intelligence in order to pursue his research interests. As we shall see, he extended this "deal" even after returning to the Soviet Union, turning his considerable talents against the United States and becoming the CIA's nemesis. (U)

### **Surviving the Gulag (U)**

In September 1938, ten years after arriving on American shores, Theremin, with GRU help, boarded a Soviet vessel as a crew member, under an assumed name and identity, and set sail for home. For many years, his friends in New York believed that he had been kidnapped by Stalin's secret police. But, as he told his Russian biographer in 1995, the decision to leave was his own—he believed that the Motherland would soon be at war and felt a duty to return.<sup>20</sup> Probably contributing to Theremin's decision was the fact that he was just one step ahead of the INS, the IRS, the Labor Department, and a host of business partners and patrons—all of whom for vari-

ous reasons would have liked to see him in jail or at least before a judge and jury. (U)

By fleeing New York, however, Theremin jumped from the frying pan into the fire. In March 1939, he was arrested in Moscow, the penalty in those paranoid times for having lived abroad. He was charged with espionage and membership in a "fascist" organization—a generic charge—and sentenced to six years in Soviet prison camps. Ironically, the Great Terror of 1937-1938 was winding down; had Theremin waited a little longer, he might not have been arrested. He was sent to Magadan, a gold-mining camp above the Arctic Circle in the Kolyma region, where temperatures fell to -94 degrees (F). A term at Magadan was in effect a death sentence. (U)

Theremin's genius saved him. Within a few months, Stalin's henchman and secret police chief, Lavrenty Beria, ordered Theremin removed from the camp and brought back to Moscow. Beria ran the Soviet Union's atomic research program and had an eye for scientific talent. He assigned Theremin to Central Design Bureau Number 29 of the Central State Aero-Hydrodynamic

Institute.<sup>21</sup> Theremin worked on aviation instruments in Moscow until the bureau was relocated beyond the Urals to Omsk and then to Sverdlovsk, following the German invasion of June 1941. (U)

The Design Bureau was an example of a unique Stalinist institution known as a *sharashka*. Called "Islands of Paradise" in Aleksandr Solzhenitsyn's *Gulag Archipelago*, *sharashkas* were minimum security facilities with bearable living conditions that held some of the best educated and most brilliant Soviet scientists, engineers, and technicians. Many Soviet advances in space, military, and intelligence technology derived from the efforts of the faceless *zeks*, as the inmates were called. (U)

As the war wound down, Theremin was returned to Moscow again and assigned to a *sharashka* at Kuchino, near Moscow, which specialized in radio electronics and measuring devices. While there, he designed a beacon that was used to locate missing submarines and aircraft, as well as to locate supplies dropped clandestinely behind enemy lines. Theremin also served as the lead scientist on the M-803 vocoder, an analog speech cipherment system. (C)

<sup>20</sup> Galejev, "Light and Shadows of a Great Life." (U)

<sup>21</sup> For details of Theremin's work at the Institute, see Glinsky, pp. 230-236, 238-242, and 259. (U)



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It was at this time that Theremin, on direct orders from Beria, designed the infamous cavity resonating microphone that found its way into the Great Seal of the United States at Spaso House. A Soviet intelligence officer who manned the listening post near the US Embassy claimed that “For a long time, our country was able to get specific and very important information, which gave us certain advantages in prediction and performance of world politics in the difficult period of the Cold War.”<sup>22</sup> (U)

In 1947, Beria also ordered Theremin to develop a wireless audio surveillance device. The result was a pioneering feat codenamed BURAN (“Snow-

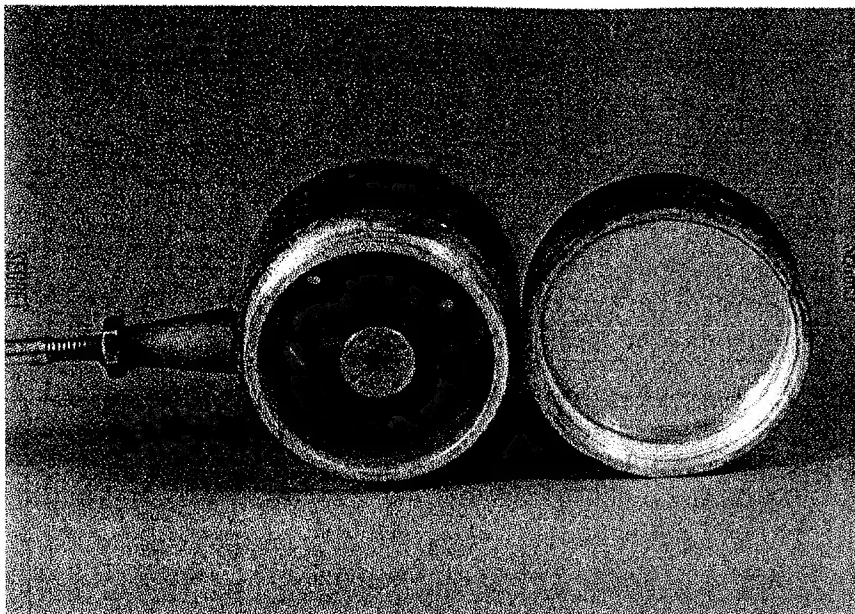
storm”).<sup>23</sup> It directed an infrared beam at window glass, where it focused on what Theremin called the “zone of optimum resonance,” picking up sound waves and reflecting them back to an interferometer and photo element. BURAN was resistant to interception and jamming and almost impossible to detect. Beria used it first against the chancery of the US Embassy and later against the French and British missions in Moscow.

With Theremin’s knowledge and assistance, he also used it against Stalin at a time when the dictator’s paranoia seemed poised to engulf the USSR in a new major domestic upheaval or a nuclear war. As a souvenir, Theremin kept tapes of Stalin’s ravings.<sup>24</sup> (U)

While still a prisoner, Theremin received a Stalin Prize, which was awarded anonymously for an unidentified contribution to Soviet intelligence (possibly BURAN). The Soviet dictator, a fan of Theremin’s, personally upgraded the prize from class II to class I. The prize carried an award of approximately \$20,000 (worth about ten times that amount today), a furnished apartment, and even maid service. (U)

<sup>22</sup> Glinsky, p. 260. (U)

<sup>23</sup> Ibid., pp. 321, 335, and 338. (U)



Close-up of the stem and diaphragm of a cavity resonator. (S)

Little is known about Theremin’s life from 1947, when he was released, until the mid-1960s. Even his Russian biographer failed to pry details from him. He tried to rebuild his life and return to his inventions. He found freedom difficult, however. Missing the order and pure research opportunities of the *sharashka*, he asked the KGB to hire him as a “free” research scientist. Theremin spent the next 20 years working in what the Soviets called “mailboxes,” secret facilities known only by their postal box numbers.<sup>25</sup> Theremin’s very

<sup>24</sup> Galeyev, “Light and Shadows of a Great Life.” (U)

<sup>25</sup> Galinsky, pp. 256-265, 270, and 300. (U)



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existence was a state secret. He was not allowed to contact relatives or friends. He was always accompanied by bodyguards and often worked on sensitive projects under armed guard. (U)

### Resurfacing (U)

At some point in the early 1960s, like millions of other “repressed persons” (the Soviet legal term), Theremin was officially absolved of past crimes and “rehabilitated.” In 1964, he began working in the Moscow Acoustic Tape and Recording Department of the Moscow State Tchaikovsky Conservatory. He remained there until 1971, when he lost his position for continuing his work in electronic music, deemed too modern for Soviet socialist esthetics. He spent the final 20 years of his life working as a “grade six mechanic” in the Acoustics Department of Moscow Lomonosov University. (U)

America’s rediscovery of Theremin began with a chance encounter in April 1967—Harold Schonberg, chief music critic for the *New York Times*, spotted Theremin at the Moscow Conservatory. For Theremin’s former friends in New York, this was the first sign of life since 1938. For years rumors had circulated that he had been executed in 1945 or shortly thereafter. Theremin, for his part, was unaware of the revival of American interest in his life, his work, and his music machine, due in part to the

theremin’s use in popular science-fiction and suspense films.<sup>26</sup> His reputation had also been burnished by the serious attention being paid to electronic music as a result of the Moog synthesizer.<sup>27</sup> In Moscow, Theremin gave Schonberg a tour of the small lab that he had set up and displayed some of his latest inventions. Schonberg wrote a flattering article that was widely read among aficionados.<sup>28</sup> (U)

For years after the encounter, Western academics and artists invited Theremin to the West, but Soviet authorities—afraid perhaps of the secrets he still

held—refused to let him leave. Finally, in 1988, *Moscow News* ran a three-part series about him, mentioning among other things his espionage in America, the secret Stalin Prize, and BURAN.<sup>29</sup> A year later, Theremin was allowed to attend an experimental music festival organized by UNESCO in Bourges, France. In 1990, he was a guest performer at the Electronic Music Festival in Stockholm. These two trips paved the way for a triumphal return to America in 1991, where Theremin had become an icon of sorts. He took part in a three-day seminar at Stanford and then returned to New York to visit his old haunts and those of his friends who were still alive. Theremin’s reputation was also growing inside Russia. In 1992, the Theremin Center for electronic music at the Moscow Conservatory opened. (U)

In 1993, American filmmaker Steven Martin produced a feature length documentary entitled *Theremin: An Electronic Odyssey*. He used footage he shot in 1991 in New York and an interview with Theremin in Moscow a year later. The film first aired on the BBC in March 1993, just two days before Theremin died at age 97. It was also shown at the 1995 New York Film Festival, and eventually won the Filmmaker’s Trophy at the Sundance Film Festival in 2000. In March 1995, the Kennedy Center’s

<sup>26</sup> Because of the eerie sounds that the theremin produced—one critic said it sounded like a violin being played under water—it became popular with Hollywood film composers, who used it to produce sound tracks for such movies as *The Day the Earth Stood Still*, *The Thing*, and *Spellbound*. One can even see a theremin in operation in Jerry Lewis’s comedy *The Delicate Delinquent*. Later, the Beach Boys rekindled interest in the theremin by using it in *Good Vibrations*, their only million-selling single. (U)

<sup>27</sup> Inventor Robert Moog had built theremins in high school and college. He wrote the introduction to Theremin’s American biography and was largely responsible for keeping interest in the Russian inventor alive in the United States. (U)

<sup>28</sup> Harold C. Schonberg, “Music: Leon Theremin,” *New York Times*, 26 April 1967, p. 40. (U)

<sup>29</sup> Glinsky, pp. 320-334. (U)

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American Film Institute Theater organized a showing of Hollywood films whose soundtracks used theremins. These were fitting tributes, since the Russian genius's invention had far more impact on the movie industry than on haute culture. Over time, Martin's film played to large audiences in the United States, Europe, and Japan, creating interest in Theremin and leading to the establishment of an international club for enthusiasts. (U)

American composer and musicologist Albert Glinsky published *Theremin: Ether Music and Espionage*, the best and most comprehensive biography of the inventor, in 2000. The book was based on the author's prize-winning 1992 Ph.D. dissertation at New York University. The bibliography of books and articles about Theremin and his creations continues to grow. There are dozens of websites devoted to him, and Theremin tee-shirts are sold on the Internet. (U)

### Payback (U)

Adulation from the music world aside, Theremin's genius caused significant problems for US intelligence over the years. In addition to spawning a series of sophisticated audio devices used against the United States worldwide, Theremin's bug in the Great Seal played an inadvertent but key role in the CIA's internal molehunt of the 1960s and 1970s that demoralized the

clandestine service and disrupted operations. KGB defector Anatoly Golitsyn made the link in 1961. Golitsyn warned the Agency of a mole named "Sasha," who was of Slavic origin, had spent several years in Germany, and had a name that began with "k" and ended in "ski." The defector claimed that the mole was a CIA officer who had been assigned to analyze the cavity resonating microphone found in Spaso House. (U)

A subsequent investigation led to Peter Karlow, an up and coming operations officer who headed the panel charged with analyzing the Soviet audio device. An Office of Strategic Services (OSS) veteran who had lost a leg during World War II, Karlow had a technical orientation and was in line to head the Agency's Technical Services Division. His life was turned upside down by Golitsyn's accusation.<sup>30</sup> In January 1962, at the Agency's request, the FBI put Karlow under electronic and physical surveillance for a

<sup>30</sup> This account of Karlow's tribulations is based on Mangold, pp. 254-257, 266, 273, and 356; and Wise, Chapter 2. (U)

year. When nothing turned up, the Bureau dropped the case, with the concurrence of the CIA's Office of Security. James Angleton of the Agency's Counterintelligence Staff, however, refused to accept Karlow's innocence. Karlow was forced to resign in September 1963 without ever knowing that he was mole suspect number one. Years later, he was one of several previously discredited CIA officers who received back pay, pensions, and compensation, as well as, in Karlow's case, the Career Intelligence Medal.<sup>31</sup> (U)

Given the damage done directly and indirectly, the Intelligence Community can take at least some satisfaction from the fact that the sophisticated cavity resonator technology was subsequently turned back against its Soviet perpetrators.<sup>32</sup> Until the Theremin bug was found in Spaso House, CIA technical experts had denigrated Soviet intelligence's technical capabilities. Set back on their heels by the discovery of the device, senior Agency

<sup>31</sup> Years later, the CIA determined that there was a "Sasha," but that he was a Russian émigré who had worked as a contract employee in West Germany before opening an art gallery in Alexandria, Virginia. He was not the source of information on the audio surveillance device. The culprit in this case was George Blake, a KGB mole inside British intelligence. (U)

<sup>32</sup> The story of how Theremin's technology was turned around comes from an interview of former CIA officer [redacted]

[redacted] Tape and transcript are available from the CIA History Staff Oral History Project. (S)

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**Theremin's story should give pause to those who assume that scientific achievement requires political freedom.**

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*hope and hopelessness. His life was a microcosm of these dueling scenarios and he spent most of his nearly one hundred years shuttling back forth between them.<sup>34</sup> (U)*

officials [ ]

Interestingly, for all of his brilliance, Theremin chose the Soviet system over the American way of life. He elected to return to the Motherland in 1938, volunteered to work for the Soviet government after his release from detention, and declined petitions to emigrate late in life. He campaigned for admission to the Communist Party for many years, finally receiving his party card just weeks before the August 1991 attempted coup that undid the Soviet empire. "I promised Lenin I would," he explained to a Russian friend who questioned his reasons.<sup>35</sup> Theremin's story should give pause to those who assume that scientific achievement requires political freedom or that the benefits of the Western way of life exert a compelling attraction on the rest of the world. (U)

### **Theremin in Perspective (U)**

Taking a broad view, Theremin remains a fascinating character not the least because he managed to bridge two dramatically divided worlds. As his American biographer put it:

*[Theremin's story] is nothing less than a metaphor for the divergence of communism and capitalism, totalitarianism and freedom, luxury and drudgery,*

<sup>33</sup> Dulles knew the [ ] who fought in the anti-Nazi underground, from his OSS days. (U)

<sup>34</sup> Glinsky, pp. 6-7. (U)

<sup>35</sup> Bulat M. Galejev, "Light and Shadows of a Great Life." (U)